

REMARKS

Claims 15-51, 66, 68-73, and 80-91 are pending. In an Official Action dated November 30, 2007, claims 26 and 36 were rejected under 35 U.S.C. § 101, claims 15-18, 25-27, 41-43, 66-67, 69, and 71-72 were rejected under 35 U.S.C. § 102, and claims 19-24, 28-40, 44-51, 68, 70, and 73 were rejected under 35 U.S.C. § 103. The rejections are addressed in turn below.

Interview Summary

Applicants thank the Examiner for an interview on February 5, 2008. The undersigned and the Examiner were present. At the interview, the rejections under 35 U.S.C. §§ 101 and 102 were discussed. Applicants agreed to amend claims 26 and 36 to address the rejections under § 101, and to amend the various independent claims as discussed at the interview, and as reflected above, to overcome the rejections under § 102.

Rejections Under 35 U.S.C. § 101

Claims 26 and 36 were rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter. These claims are amended herewith to recite “wherein computer executable instructions for performing at least a portion of said method are received via a modulated data signal.” The modulated data signal itself is not claimed, rather it is claimed as a characteristic of the underlying method that instructions are received via a modulated data signal.

Rejections Under 35 U.S.C. § 102

Claims 15-18, 25-27, 41-43, 66-67, 69, and 71-72 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Pat. 5,748,468 (Notenboom). While Applicants respectfully disagree with the rejections, independent claims 15, 28, 41, and 66 are amended herewith to more clearly define over Notenboom, and thereby expedite allowance of the application.

Notenboom teaches a coprocessor resource manager by which coprocessor resources are “allocated to processing tasks according to user set priorities.” Notenboom col. 3, line 15.

However, Notenboom's allocation of coprocessor resources "according to user set priorities" does not prevent "hogging" the coprocessor by a single application, especially where such single application may have many tasks that are considered high priority by Notenboom's system.

One reason Notenboom does not prevent hogging by a single application is that *Notenboom allocates coprocessing resources based on a task-by-task priority, rather than on relative priorities of applications as a whole*. As stated in Notenboom, col. 3, lines 30-32, "the device driver associates each requested processing *task* of the group with a service class..." Thus, a string of high-priority tasks from a single application could be prioritized over all other tasks from one or more other applications.

In contrast, Applicants independent claims teach "determining an order for processing the tasks wherein the order accounts for any relative priority among the first **application** relating to said tasks **and one or more other applications** relating to additional tasks, and a corresponding amount of processing time that the first application and one or more other applications are entitled to," as recited in claim 15. Similar recitations are found in claims 28, 41, and 66.

The amendments submitted to the above claim element emphasize that priority is assigned at the *application* level (the application, in turn, relating to various tasks) rather than at the task level. By assigning priority by application, rather than by task, and accounting for a corresponding amount of processing time that applications are entitled to, as recited in Applicants' claims, coprocessor hogging can be avoided.

Applicants implementation of application-level prioritization is accomplished, in part, by maintaining tasks in a user mode command buffer that maintains application context. Applicants' independent claims are thus amended herewith to specifically recite a user mode command buffer. The Examiner will please refer to the "first buffers" in Applicants' Fig. 2, and the "command buffer" shown at bottom right of Fig. 3.

While Notenboom states that "on an application's request to a device driver for an operation performable on the co-processing platform, the device driver issues a request to load and execute a group of one or more processing tasks to perform the operation on the co-processing platform," see Notenboom col. 3, lines 25-30, there is no indication that Notenboom's "group of one or more processing tasks" are stored in an application context of a

user mode command buffer. Instead it appears that the user mode driver generates and submits the tasks based on Notenboom's request for an operation.

Because each of Applicants' independent claims contains the elements discussed above, and the various dependent claims thus also define over Notenboom, Applicants respectfully request reconsideration of the various rejections under 35 U.S.C. § 102.

Rejections Under 35 U.S.C. § 103

Claims 19 and 20 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Notenboom and in view of the allegedly well-known practice in the art. Claims 21-23, 28-37, 44-51, 68, 70 and 73 were rejected as allegedly unpatentable over Notenboom in view of U.S. Pat. 5,437,017 (Moore). Claim 24 was rejected as allegedly unpatentable over Notenboom in view of Moore and further in view of U.S. Pat. 6,496,916 (Fadavi-Ardekani). Claims 38-40 were rejected as allegedly unpatentable over Notenboom in view of Moore and further in view of U.S. Pat. 5,864,512 (Buckelew).

Also considered pertinent to Applicants' disclosure are U.S. Pat. 5,016,161 (Van Loo), U.S. Pat. 5,761,506 and U.S. Pat. 6,272,516 (both listing Angle et al as inventors), U.S. Pat. 6,061,711 (Song), and U.S. Pat. 6,092,127 (Tausheck).

Because each of Applicants' independent claims contains the elements discussed above, and none of the references of record cure the above-discussed deficiencies of Notenboom, Applicants respectfully request reconsideration of the various rejections under 35 U.S.C. § 103(a).

Furthermore, Applicants note that certain rejections under 35 U.S.C. § 103(a) do not address all the limitations of the rejected claims. For example, claim 19 provides:

19. (Original) A method according to claim 18, further comprising returning the rendering commands to the API, and submitting them to a coprocessor kernel.

The Official admits that Notenboom does not teach claim 19. See Official Action page 6. However, in its subsequent analysis, it appears that the Official Action addresses only the "coprocessor kernel" aspect of claim 19, then jumps to conclude that because operating systems existed with kernel modes, both the "returning" and "submitting" steps would have

DOCKET NO.: MSFT-2857/304862.02
Application No.: 10/763,777
Office Action Dated: November 30, 2007

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been obvious. However, Applicants respectfully point out that a huge number of architectures might be used, even in environments with a kernel mode, and the limitations of claim 19 are directed to aspects of only a subset of such possible architectures. Therefore, reconsideration of claim 19 is respectfully requested. Also, the Official Actions analysis of claim 20 and the various other claims rejected under 35 U.S.C. § 103(a) is similarly painted with too broad a brush. Reconsideration of the rejections is respectfully requested.

Date: February 27, 2008

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